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Concl

5776, SEQ ID NO: 5781, SEQ ID NO: 5782, SEQ ID NO: 5783, SEQ ID NO: 5785, SEQ ID NO: 5787, SEQ ID NO: 5800, SEQ ID NO: 5804, SEQ ID NO: 5815, SEQ ID NO: 5818, SEQ ID NO: 5821, SEQ ID NO: 5823, SEQ ID NO: 5828, SEQ ID NO: 5830, SEQ ID NO: 5832, SEQ ID NO: 5836, SEQ ID NO: 5838, SEQ ID NO: 5840, SEQ ID NO: 5845, SEQ ID NO: 5849, SEQ ID NO: 5850, SEQ ID NO: 5851, SEQ ID NO: 5856, SEQ ID NO: 5859, SEQ ID NO: 5863, SEQ ID NO: 5868, SEQ ID NO: 5871, SEQ ID NO: 5874, SEQ ID NO: 5875, SEQ ID NO: 5877, SEQ ID NO: 5893, SEQ ID NO: 5896, SEQ ID NO: 5901, SEQ ID NO: 5908, SEQ ID NO: 5909, SEQ ID NO: 5920, SEQ ID NO: 5922, SEQ ID NO: 5926, SEQ ID NO: 5928, SEQ ID NO: 5929, SEQ ID NO: 5931, SEQ ID NO: 5936, SEQ ID NO: 5937, SEQ ID NO: 5939, SEQ ID NO: 5941, SEQ ID NO: 5944, SEQ ID NO: 5945, SEQ ID NO: 5950, SEQ ID NO: 5955, SEQ ID NO: 5960, SEQ ID NO: 5961, SEQ ID NO: 5963, SEQ ID NO: 5964, SEQ ID NO: 5968, SEQ ID NO: 5973, SEQ ID NO: 5974, SEQ ID NO: 5991, SEQ ID NO: 5994, SEQ ID NO: 5999, SEQ ID NO: 6000, SEQ ID NO: 6001, SEQ ID NO: 6005, SEQ ID NO: 6006, SEQ ID NO: 6007, SEQ ID NO: 6011, SEQ ID NO: 6017, SEQ ID NO: 6018, SEQ ID NO: 6022, SEQ ID NO: 6023, SEQ ID NO: 6026, SEQ ID NO: 6030, SEQ ID NO: 6033, SEQ ID NO: 6042, SEQ ID NO: 6046, SEQ ID NO: 6059, SEQ ID NO: 6063, SEQ ID NO: 6065, SEQ ID NO: 6066, SEQ ID NO: 6089, SEQ ID NO: 6091, SEQ ID NO: 6098, SEQ ID NO: 6106, SEQ ID NO: 6107, SEQ ID NO: 6110, SEQ ID NO: 6117, SEQ ID NO: 6121, SEQ ID NO: 6124, SEQ ID NO: 6131, SEQ ID NO: 6137, SEQ ID NO: 6141, SEQ ID NO: 6144, SEQ ID NO: 6145, SEQ ID NO: 6147, SEQ ID NO: 6154, SEQ ID NO: 6167, SEQ ID NO: 6168, SEQ ID NO: 6170, SEQ ID NO: 6173, SEQ ID NO: 6178, and SEQ ID NO: 6181.

Remarks

I. Support for the Amendments

The claims have been amended to recite the elected sequences and to correct typographical errors. Support for the foregoing claim amendments may be found throughout the specification, for example at page 18, line 1 through page 20, line 9, at

page 61 line 1-10, in the sequence listing, and in the original claims. No new matter enters by these amendments.

II. The Restriction Requirement

Applicants wish to thank the Examiner for reconsidering and searching Groups I and II together. Applicants also acknowledge the finality of the restriction requirement for electing a combination, but Applicants respectfully maintain their traversal. Office Action at page 2. In order to facilitate prosecution, the claims have been amended to remove non-elected sequences. However, where only a relatively straightforward search is required from the Examiner, limiting the examination to such a small number of sequences will pose an undue hardship for Applicants. Arrays of nucleic acid sequence are commonly employed where a single array on a solid support contains thousands of separated nucleic acid sequences. To require an applicant to file hundreds of applications to cover a single product would serve only to effectively deprive applicant of patent rights on his invention. Thus, Applicants respectfully maintain their traversal to the restriction requirement limiting the examination to 100 SEQ ID Numbers.

III. Rejections Under 35 U.S.C. § 112, Second Paragraph, for Indefiniteness

The Examiner has rejected claims 8-10 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Office Action at page 3. Applicants respectfully disagree with this assertion. Applicants respectfully point out that the claims are to be read in light of the specification. *See in re Vogel*, 422 F.2d 438, 441, 164 U.S.P.Q. 619, 622 (C.C.P.A. 1970). The test for determining whether terms in a given claim are indefinite is whether one skilled in the art would understand what is claimed. *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 927 F.2d 1200, 18 U.S.P.Q.2d 1016 (Fed. Cir. 1991), *cert denied*, 112 S.Ct. 169 (1991). A person of ordinary skill in the art would understand the metes and bounds of the claims read in light of the disclosure of the specification.

The Examiner contends the phrase "comprising 10^3 nucleic acid molecules or more wherein at least 10% of the nucleic are different and ([sic] complementary to a

molecule having a sequence selected from the group consisting of,” as allegedly used in the above referenced claims is indefinite because the claims recite only a limited number of SEQ ID Numbers and the claim reads on a microarray comprising more than 1000 nucleic acids. Office Action at page 3.

The Examiner appears to base the indefiniteness rejection on the basis that the claim reads on a “microarray comprising more than 1000 nucleic acid 10% of which must be complementary to the recited SEQ ID Numbers.” Office Action at page 3. However, the Examiner then argues the claim is indefinite because such an array would include 5000 nucleic acids and require 500 SEQ ID Numbers, which the present claims do not recite. *Id.* This position is wrong as a matter of law.

Applicants respectfully point out that there is no requirement in the claim that limits the array to one consisting of 5000 nucleic acids. However, even if the Examiner’s rejection is based on the argument that Applicants have not claimed an adequate number of sequences, Applicants have disclosed 57,264 SEQ ID Numbers in the present invention. *See* Sequence Listing. In the Office Action of December 19, 2000 (paper number 5), the Examiner restricted Applicants to one combination of 100 sequences for examination. Although Applicants traversed the restriction, 100 sequences of the claims for examination were elected. Applicants have described in the specification more than an adequate number of sequences to overcome an indefiniteness rejection based on this ground. Moreover, it is improper for the Examiner to restrict Applicants to a small number of sequences for examination and then reject the claims based on the argument that the Applicants have not claimed an adequate number of sequences.

Furthermore, if the Examiner is rejecting the claims based on the use of the open-ended term “comprising” which allows for the inclusion of additional elements, this is not the proper basis for such a rejection. It is well established that claims “may be broader than the specific embodiment disclosed in a specification.” *Ralston Purina Co. v. Far-Mar-Co.*, 772 F.2d 1570, 1575, 227 U.S.P.Q. 177, 179 (Fed. Cir. 1985), *quoting In re Rasmussen*, 650 F.2d 1212, 1215, 211 U.S.P.Q. 323, 326 (C.C.P.A. 1981). Applicants

have provided a detailed description of the microarray of the present invention. *See* Specification at page 59, line 25 through page 62, line 7. Simply because the claims may include additional nucleic acids sequences does not render them indefinite under 35 U.S.C. § 112, paragraph two. The limitations of the claim are clear when read in light of the specification. Therefore, reconsideration and withdraw of this rejection is respectfully requested.

The Examiner has also rejected claims 8-11 under 35 U.S.C. § 112, second paragraph, for the recitation of the phrase “nucleic acid molecules that are different”. Office Action at page 3. Applicants respectfully disagree, but believe this rejection has been overcome by the foregoing claim amendments.

Based on the foregoing, Applicants assert that the rejection under 35 U.S.C. § 112, second paragraph, is improper and should be withdrawn.

IV. Rejection under 35 U.S.C. § 101

Claims 8-11 were rejected under 35 U.S.C. § 101, because the claimed invention is allegedly not supported by either specific and/or substantial utility or a well established utility as outlined in the Revised Interim Utility Guidelines Training Materials (“Interim Guidelines”). Applicants respectfully traverse this rejection.

The Examiner acknowledges that the specification describes multiple utilities for the present invention, including for studying genes that are agronomically significant, expression studies, and detection of polymorphisms. Office Action at page 6. However, the Examiner contends that none of these utilities constitutes a “substantial” or “specific” utility as defined in the Interim Guidelines¹ because they are not “specific for a certain disease, condition, or certain agronomically significant traits”. *Id.*

¹ Applicants respectfully point out that the Patent Office has said the Interim Guidelines “do not constitute substantive rulemaking and hence do not have the force and effect of law. They are designed to assist Office personnel in analyzing claimed subject matter for

Footnote continued on next page

Applicants respectfully disagree. The application of the Interim Guidelines ignores the presently disclosed utilities and contravenes well-established doctrines of utility developed in the courts.

It is well-established law that “when a properly claimed invention meets at least one stated objective, utility under section 101 is clearly shown.” *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 958, 220 U.S.P.Q. 592, 598 (Fed. Cir. 1983). As acknowledged by the Examiner, the specification describes multiple objectives and utilities that are met by the present invention. For example, the nucleic acid molecules or the claimed microarray are useful in determining the presence of polymorphisms, isolating specific promoter sequences, and to obtain nucleic acid homologues, *etc.* (*see, e.g.*, Specification, beginning at page 33, under heading “Uses of the Agents of the Invention”).

Many of these uses are directly analogous to the use of a microscope. An important utility of a microscope resides in its use to identify and characterize the structure of biological tissues in a sample, cell, or organism. Significantly, the utility of a microscope under 35 U.S.C. § 101 is not compromised by its use as a tool in this manner. Many of the presently disclosed utilities are directly analogous to the utilities of a microscope, *i.e.* the claimed nucleic acid molecules may be used to identify and characterize nucleic acid molecules within a sample, cell, or organism. Such utility is indistinguishable from the legally sufficient utility of a microscope. Thus, the presently disclosed sequences possess the requisite utility under 35 U.S.C. § 101.

In the Office Action, the Examiner provides no evidence challenging the disclosed utilities for the presently claimed nucleic acid molecules. Rather, the Examiner

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compliance with substantive law. Rejections will be based upon the substantive law, and it is these rejections which are appealable.” Department of Commerce, Patent and Trademark Office, *Request for Comments on Interim Guidelines for Examination of Patent Applications Under the 35 U.S.C. § 112(1) ‘Written Description’ Requirement*, 63 Fed. Reg. 32639, 32639-44 (June 15, 1998). As such, the Examiner’s sole reliance on the Guidelines (Office Action at 7 – 8) is improper.

attempts to undermine the existing utilities by stating that the disclosed "utilities are considered to be nonsubstantial because no substantial utility has been established for the claimed subject matter." Office Action at page 6. The Examiner further contends that, "[u]nless the array, or the probes fixed on the array (i.e., nucleic acids), are specific for a certain disease, condition, or certain agronomically significant traits, the nucleic acids is [sic] only useful for conducting further research to find a substantial utility." *Id.*

In short, the Examiner suggests that the asserted utilities are legally insufficient simply because other molecules can be used for the same purpose. This position is wrong as a matter of law – there is no requirement of exclusive utility in the patent law. *See Carl Zeiss Stiftung v. Renshaw PLC*, 945 F.2d 1173, 1180, 20 U.S.P.Q.2d 1094, 1100 (Fed. Cir. 1991) ("An invention need not be the best or the only way to accomplish a certain result...").

Moreover, this position offends the sensibilities. For example, such an argument implies that a new golf club has no legal utility because other golf clubs can be used for the same purpose, *i.e.* hitting golf balls. Such a result is not only untenable, but requires reading "into the patent laws limitations and conditions which the legislature has not expressed," a practice condemned by the Supreme Court. *See Diamond v. Chakrabarty*, 447 U.S. 303, 308, 206 U.S.P.Q. 193, 196 (1980), *quoting United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199, 17 U.S.P.Q. 154, 162 (1933). Thus, it must be the case that a utility, generic to a broad class of molecules, does not compromise the specific utility of an individual member of that class.

Applicants note that the nucleic acid molecules of the claimed array encompass many utilities. Some of these utilities may be common to a broader class of molecules. For instance, nucleic acid sequences may generally be used to identify and isolate related sequences. However, when used in this manner, the result is not generic. Rather, the claimed nucleic acid molecules will identify a *unique* subset of related sequences. This subset of related sequences is specific to the claimed sequences and cannot be identified by any generic nucleic acid molecule. For example, a random nucleic acid molecule

would not provide this specific utility. Referring again to the golf club analogy, the club is still generically hitting a golf ball, but is uniquely designed to hit the ball in a manner that is distinct from other clubs. Once again, Applicants assert that the claimed nucleic acid sequences exhibit the requisite utility under 35 U.S.C. § 101.

Furthermore, utility is determined “by reference to, and a factual analysis of, the disclosure of the application.” *In re Ziegler*, 992 F.2d 1197, 1201, 26 U.S.P.Q.2d 1600, 1603 (Fed. Cir. 1993), *quoting Cross v. Iizuka*, 753 F.2d 1040, 1044, 224 U.S.P.Q. 739, 742 (Fed. Cir. 1985). The Examiner “has the initial burden of challenging a presumptively correct assertion of utility in the disclosure.” *In re Brana*, 51 F.3d 1560, 1567, 34 U.S.P.Q.2d 1436, 1441 (Fed. Cir. 1995). The utilities asserted in the specification must be accepted as factually sound unless the Patent Office cites information that undermines the credibility of the assertion. *Id.* The Examiner “must do more than merely question operability – [he] must set forth factual reasons which would lead one skilled in the art to question the objective truth of the statement of operability.” *In re Gaubert*, 524 F.2d 1222, 1224-25, 187 U.S.P.Q. 664, 666 (C.C.P.A. 1975) (emphasis in original); MPEP § 706.03(a)(1) (“Office personnel are reminded that they must treat as true a statement of fact made by an applicant in relation to an asserted utility, unless countervailing evidence can be provided...”).

Here, the Examiner has not even attempted to meet this burden. Thus, because the Examiner does not challenge the credibility of the disclosed utilities, no proper rejection has been made.

In view of the above, Applicants contend that the claimed nucleic acid molecules are supported by credible, specific, and substantial utilities disclosed in the specification. Moreover, the Examiner has failed to raise any credible evidence challenging the presently asserted utilities. Consequently, the rejection of claims 8-11 under 35 U.S.C. § 101 is improper. Reconsideration and withdrawal of this rejection are respectfully requested.

V. The Rejection Under 35 U.S.C. § 112, First Paragraph: Enablement

Claims 8-11 were rejected under 35 U.S.C. § 112, first paragraph, as not being enabled by the specification, because the claimed invention allegedly lacks utility (*i.e.*, an invention with no utility cannot be enabled). Applicants respectfully traverse this rejection, and note that this rejection has been overcome by the foregoing arguments regarding utility. Thus, the enablement rejection under 35 U.S.C. § 112, first paragraph, is improper. Reconsideration and withdrawal are respectfully requested.

VI. The Rejection Under 35 U.S.C. § 112, First Paragraph: Written Description

Claims 8-11 were also rejected under 35 U.S.C. § 112, first paragraph, for allegedly lacking an adequate written description. Applicants respectfully traverse this rejection.

The Examiner admits that “[t]he claimed SEQ ID Numbers meet the written description and enablement provisions of 35 U.S.C. 112, first paragraph.” Office Action at page 7. However, the Examiner rejects claims 8-11 because “[t]he specification provides insufficient written description to support the genus encompassed by the claim.” Office Action at page 8. However, such an assertion is unfounded.

As the Examiner notes, the purpose of the written description requirement is to ensure that the inventors had possession of the claimed subject matter, *i.e.* to ensure that the inventors actually invented what is claimed. *Gentry Gallery Inc. v. Berkline Corp.*, 134 F.3d 1473, 1479, 45 U.S.P.Q.2d 1498, 1503 (Fed. Cir. 1998); *Lockwood v. American Airlines*, 107 F.3d 1565, 1572, 41 U.S.P.Q.2d 1961, 1966 (Fed. Cir. 1997); *In re Alton*, 76 F.3d 1168, 1172, 37 U.S.P.Q.2d 1578, 1581 (Fed. Cir. 1996). In accordance with this purpose, Applicants need not “describe,” in the sense of Section 112, all things that are encompassed by the claims. To contend otherwise would contradict established jurisprudence, which teaches that a patent may be infringed by technology developed after a patent issues. *United States Steel Corp. v. Phillips Petroleum Co.*, 865 F.2d 1247, 1251, 9 U.S.P.Q.2d 1461, 1464 (Fed. Cir. 1989).

The Examiner further contends that the skilled artisan cannot envision the detailed chemical structure of the claimed polynucleotides. According to the Examiner, proper written description support for a claim directed to a nucleic acid sequence requires nothing less than the actual disclosure of every sequence encompassed by that claim. In support of this proposition, the Examiner relies on *Regents of the University of California v. Eli Lilly and Co.*, 119 F.3d 1559, 43 U.S.P.Q.2d 1398 (Fed. Cir. 1997). Applicants respectfully disagree and point out that claims “may be broader than the specific embodiment disclosed in a specification.” *Ralston Purina Co. v. Far-Mar-Co.*, 772 F.2d 1570, 1575, 227 U.S.P.Q. 177, 179 (Fed. Cir. 1985), quoting *In re Rasmussen*, 650 F.2d 1212, 1215, 211 U.S.P.Q. 323, 326 (C.C.P.A. 1981). Thus, simply because the claimed nucleic acid sequences may also include mutations, additions, allelic variations, splice variations and the like, does not require that Applicants describe each and every one of these molecules.

Applicants assert that the genus of sequences encompassed by the claims are supported by Applicants’ disclosure of common structural attributes. Specifically, Applicants have provided a detailed chemical structure, *i.e.*, the nucleic acid sequences. Moreover, closely related nucleic acid molecules falling within the scope of the present claims are readily recognizable – they either hybridize under the presently claimed conditions to the molecules comprising the claimed SEQ ID Numbers, or they do not. The fact that the nucleic acid molecules may comprise additional sequences, or variations is beside the point. Such modifications are readily envisioned by one of ordinary skill in the art and are disclosed throughout the present specification.

Consequently, the present case is clearly different from *Eli Lilly*. The present claims “distinguish the claimed invention from others” and define “structural features commonly possessed by members of the genus that distinguishes them from others,” unlike the claims at issue in *Eli Lilly*. 119 F.3d 1559, 1568-69, 43 U.S.P.Q.2d 1398 (Fed. Cir. 1997) (“a cDNA is not defined or described by the mere name ‘cDNA’...but requires a kind of specificity usually achieved by means of the recitation of the sequence of

nucleotides that make up the DNA.”). Thus, there is no deficiency in the written description support for the claimed invention.

Accordingly, Applicants respectfully request that the rejection under 35 U.S.C. § 112, first paragraph be withdrawn.

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Applicants do not believe that any fees are due at this time; however, should any fees be required for any reason relating to this document, the Commissioner is authorized to deduct the fees from Deposit Account No. 13-4125, referencing docket number 38-21(15454)B.

Respectfully submitted,

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David R. Marsh

Marked-Up Version of Amended Claims

8. (Once amended) A microarray comprising [having] a substrate with a surface comprising 10^3 nucleic acid molecules or more where at least 10% of the nucleic acid molecules are comprised of different sequences and at least about 250 nucleotide residues and complementary to a molecule comprising [having] a sequence selected from the group consisting of SEQ ID NO: 5776[and], SEQ ID NO: 5781[and], SEQ ID NO: 5782[and], SEQ ID NO: 5783[and], SEQ ID NO: 578[6 and]5, SEQ ID NO: 5787[and], SEQ ID NO: 5800[and], SEQ ID NO: 5804, SEQ ID NO: 5815[and], SEQ ID NO: 5818[and], SEQ ID NO: 5821[and], SEQ ID NO: 5823[and], SEQ ID NO: 5828[and], SEQ ID NO: 5830[and], SEQ ID NO: 5832, SEQ ID NO: 5836[and], SEQ ID NO: 5838[and], SEQ ID NO: 5840[and], SEQ ID NO: 5845[and], SEQ ID NO: 5849[and], SEQ ID NO: 5850[and], SEQ ID NO: 5851[and], SEQ ID NO: 5856, SEQ ID NO: 5859[and], SEQ ID NO: 5863[and], SEQ ID NO: 5868[and], SEQ ID NO: 5871, SEQ ID NO: 5874[and], SEQ ID NO: 5875[and], SEQ ID NO: 5877[and], SEQ ID NO: 5893[and], SEQ ID NO: 5896[and], SEQ ID NO: 5901[and], SEQ ID NO: 5908, SEQ ID NO: 5909[and], SEQ ID NO: 5920, SEQ ID NO: 5922[and], SEQ ID NO: 5929, SEQ ID NO: 5926[and], SEQ ID NO: 5928[and], SEQ ID NO: 5931[and], SEQ ID NO: 5936[and], SEQ ID NO: 5937[and], SEQ ID NO: 5939[and], SEQ ID NO: 5941[and], SEQ ID NO: 5944, SEQ ID NO: 5945, SEQ ID NO: 5950[and], SEQ ID NO: 5955[and], SEQ ID NO: 59[56 and]60, SEQ ID NO: 5961, SEQ ID NO: 5963[and], SEQ ID NO: 5964, SEQ ID NO: 5968, SEQ ID NO: 5973[and], SEQ ID NO: 5974[and], SEQ ID NO: 5991[and], SEQ ID NO: 5994[and], SEQ ID NO: 5999[and], SEQ ID NO: 6000[and], SEQ ID NO: 6001[and], SEQ ID NO: 6005[and], SEQ ID NO: 6006[and], SEQ ID NO: 6007[and], SEQ ID NO: 6011[and], SEQ ID NO: 6017[and], SEQ ID NO: 6018, SEQ ID NO: 6022[and], SEQ ID NO: 6023[and], SEQ ID NO: 6026, SEQ ID NO: 6030[and], SEQ ID NO: 6033[and], SEQ ID NO: 6042, SEQ ID NO: 6059[and], SEQ ID NO: 6063, SEQ ID NO: 6046, SEQ ID NO: 6065[and], SEQ ID NO: 6066, SEQ ID NO: 6089[and], SEQ ID NO: 6091[and], SEQ ID NO: 6098, SEQ ID NO: 6106[and], SEQ ID NO: 6107[and], SEQ ID NO: 6110[and], SEQ ID NO: 6117[and], SEQ ID NO: 6121[and], SEQ ID NO: 6124[and], SEQ ID NO: 6131, SEQ ID NO: 6137[

and], SEQ ID NO: 6141, SEQ ID NO: 6144, SEQ ID NO: 6145, SEQ ID NO: 6147, SEQ ID NO: 6154[and], SEQ ID NO: 6167[and], SEQ ID NO: 6168[and], SEQ ID NO: 6170[and], SEQ ID NO: 6173[and], SEQ ID NO: 6178, and SEQ ID NO: 6181[and SEQ ID NO: 6188 and SEQ ID NO: 6195 and SEQ ID NO: 6196 and SEQ ID NO: 6205 and SEQ ID NO: 6211 and SEQ ID NO: 6212 and SEQ ID NO: 6214 and SEQ ID NO: 6234 and SEQ ID NO: 6241 and SEQ ID NO: 6245 and SEQ ID NO: 6251 and SEQ ID NO: 6256 and SEQ ID NO: 6261 and SEQ ID NO: 6270 and SEQ ID NO: 6272 and SEQ ID NO: 6278 and SEQ ID NO: 6283 and SEQ ID NO: 6286 and SEQ ID NO: 6288 and SEQ ID NO: 6289 and SEQ ID NO: 6291 and SEQ ID NO: 6292 and SEQ ID NO: 6293 and SEQ ID NO: 6295 and SEQ ID NO: 6302 and SEQ ID NO: 6309 and SEQ ID NO: 6316 and SEQ ID NO: 6321 and SEQ ID NO: 6324 and SEQ ID NO: 6332 and SEQ ID NO: 6337 and SEQ ID NO: 6347 and SEQ ID NO: 6348 and SEQ ID NO: 6352 and SEQ ID NO: 6355 and SEQ ID NO: 6358 and SEQ ID NO: 6361 and SEQ ID NO: 6363 and SEQ ID NO: 6367 and SEQ ID NO: 6369 and SEQ ID NO: 6371 and SEQ ID NO: 6375 and SEQ ID NO: 6377 and SEQ ID NO: 6385 and SEQ ID NO: 6405 and SEQ ID NO: 6416 and SEQ ID NO: 6418 and SEQ ID NO: 6425 and SEQ ID NO: 6433 and SEQ ID NO: 6445 and SEQ ID NO: 6451 and SEQ ID NO: 6454 and SEQ ID NO: 6459 and SEQ ID NO: 6462 and SEQ ID NO: 6464 and SEQ ID NO: 6465 and SEQ ID NO: 6466 and SEQ ID NO: 6476 and SEQ ID NO: 6479 and SEQ ID NO: 6481 and SEQ ID NO: 6482 and SEQ ID NO: 6483 and SEQ ID NO: 6489 and SEQ ID NO: 6497 and SEQ ID NO: 6502 and SEQ ID NO: 6514 and SEQ ID NO: 6521 and SEQ ID NO: 6529 and SEQ ID NO: 6530 and SEQ ID NO: 6535 and SEQ ID NO: 6540 and SEQ ID NO: 6553 and SEQ ID NO: 6556 and SEQ ID NO: 6564 and SEQ ID NO: 6565 and SEQ ID NO: 6571 and SEQ ID NO: 6598 and SEQ ID NO: 6603 and SEQ ID NO: 6604 and SEQ ID NO: 6606 and SEQ ID NO: 6611 and SEQ ID NO: 6613 and SEQ ID NO: 6620 and SEQ ID NO: 6628 and SEQ ID NO: 6633 and SEQ ID NO: 6639 and SEQ ID NO: 6640 and SEQ ID NO: 6643 and SEQ ID NO: 6651 and SEQ ID NO: 6652 and SEQ ID NO: 6654 and SEQ ID NO: 6657 and SEQ ID NO: 6659 and SEQ ID NO: 6661 and SEQ ID NO: 6664 and SEQ ID NO: 6668 and SEQ ID NO: 6670 and SEQ ID NO: 6671 and SEQ ID NO: 6674 and SEQ ID NO: 6680 and SEQ ID NO: 6685 and SEQ ID NO: 6686 and SEQ ID NO:

6688 and SEQ ID NO: 6691 and SEQ ID NO: 6692 and SEQ ID NO: 6696 and SEQ ID NO: 6697 and SEQ ID NO: 6702 and SEQ ID NO: 6704 and SEQ ID NO: 6711 and SEQ ID NO: 6716 and SEQ ID NO: 6724 and SEQ ID NO: 6726 and SEQ ID NO: 6728 and SEQ ID NO: 6739 and SEQ ID NO: 6742 and SEQ ID NO: 6744 and SEQ ID NO: 6747 and SEQ ID NO: 6764 and SEQ ID NO: 6766 and SEQ ID NO: 6770 and SEQ ID NO: 6772 and SEQ ID NO: 6773 and SEQ ID NO: 6778 and SEQ ID NO: 6781 and SEQ ID NO: 6782 and SEQ ID NO: 6790 and SEQ ID NO: 6792 and SEQ ID NO: 6841 and SEQ ID NO: 6870 and SEQ ID NO: 6871 and SEQ ID NO: 6886 and SEQ ID NO: 6894 and SEQ ID NO: 6904 and SEQ ID NO: 6906 and SEQ ID NO: 6923 and SEQ ID NO: 6931 and SEQ ID NO: 6934 and SEQ ID NO: 6938 and SEQ ID NO: 6939 and SEQ ID NO: 6949 and SEQ ID NO: 6953 and SEQ ID NO: 6961 and SEQ ID NO: 6965 and SEQ ID NO: 6978 and SEQ ID NO: 6991 and SEQ ID NO: 7000 and SEQ ID NO: 7002 and SEQ ID NO: 7036 and SEQ ID NO: 7050 and SEQ ID NO: 7053 and SEQ ID NO: 7062 and SEQ ID NO: 7070 and SEQ ID NO: 7078 and SEQ ID NO: 7083 and SEQ ID NO: 7096 and SEQ ID NO: 7100 and SEQ ID NO: 7106 and SEQ ID NO: 7107 and SEQ ID NO: 7134 and SEQ ID NO: 7144 and SEQ ID NO: 7161 and SEQ ID NO: 7164 and SEQ ID NO: 7178 and SEQ ID NO: 7206 and SEQ ID NO: 7220 and SEQ ID NO: 7221 and SEQ ID NO: 7224 and SEQ ID NO: 7228 and SEQ ID NO: 7229 and SEQ ID NO: 7241 and SEQ ID NO: 7246 and SEQ ID NO: 7248 and SEQ ID NO: 7249 and SEQ ID NO: 7254 and SEQ ID NO: 7261 and SEQ ID NO: 7267 and SEQ ID NO: 7277 and SEQ ID NO: 7332 and SEQ ID NO: 7338 and SEQ ID NO: 7351 and SEQ ID NO: 7357 and SEQ ID NO: 7369 and SEQ ID NO: 7378 and SEQ ID NO: 7380 and SEQ ID NO: 7384 and SEQ ID NO: 7386 and SEQ ID NO: 7395 and SEQ ID NO: 7438 and SEQ ID NO: 7444 and SEQ ID NO: 7447 and SEQ ID NO: 7461 and SEQ ID NO: 7463 and SEQ ID NO: 7465 and SEQ ID NO: 7468 and SEQ ID NO: 7478 and SEQ ID NO: 7490 and SEQ ID NO: 7491 and SEQ ID NO: 7492 and SEQ ID NO: 7509 and SEQ ID NO: 7514 and SEQ ID NO: 7536 and SEQ ID NO: 7559 and SEQ ID NO: 7563 and SEQ ID NO: 7565 and SEQ ID NO: 7572 and SEQ ID NO: 7576 and SEQ ID NO: 7590 and SEQ ID NO: 7592 and SEQ ID NO: 7594 and SEQ ID NO: 7596 and SEQ ID NO: 7602 and SEQ ID NO: 7612 and SEQ ID NO: 7617 and SEQ ID NO: 7618 and SEQ ID NO: 7622 and SEQ ID NO:

7624 and SEQ ID NO: 7627 and SEQ ID NO: 7631 and SEQ ID NO: 7632 and SEQ ID NO: 7644 and SEQ ID NO: 7646 and SEQ ID NO: 7655 and SEQ ID NO: 7657 and SEQ ID NO: 7659 and SEQ ID NO: 7677 and SEQ ID NO: 7682 and SEQ ID NO: 7685 and SEQ ID NO: 7690 and SEQ ID NO: 7694 and SEQ ID NO: 7697 and SEQ ID NO: 7701 and SEQ ID NO: 7702 and SEQ ID NO: 7703 and SEQ ID NO: 7707 and SEQ ID NO: 7708 and SEQ ID NO: 7711 and SEQ ID NO: 7715 and SEQ ID NO: 7718 and SEQ ID NO: 7721 and SEQ ID NO: 7723 and SEQ ID NO: 7724 and SEQ ID NO: 7729 and SEQ ID NO: 7736 and SEQ ID NO: 7745 and SEQ ID NO: 7749 and SEQ ID NO: 7757 and SEQ ID NO: 7761 and SEQ ID NO: 7770 and SEQ ID NO: 7772 and SEQ ID NO: 7777 and SEQ ID NO: 7782 and SEQ ID NO: 7791 and SEQ ID NO: 7795 and SEQ ID NO: 7796 and SEQ ID NO: 7800 and SEQ ID NO: 7801 and SEQ ID NO: 7802 and SEQ ID NO: 7808 and SEQ ID NO: 7809 and SEQ ID NO: 7813 and SEQ ID NO: 7818 and SEQ ID NO: 7823 and SEQ ID NO: 7825 and SEQ ID NO: 7826 and SEQ ID NO: 7827 and SEQ ID NO: 7831 and SEQ ID NO: 7837 and SEQ ID NO: 7844 and SEQ ID NO: 7845 and SEQ ID NO: 7847 and SEQ ID NO: 7849 and SEQ ID NO: 7852 and SEQ ID NO: 7856 and SEQ ID NO: 7860 and SEQ ID NO: 7862 and SEQ ID NO: 7863 and SEQ ID NO: 7865 and SEQ ID NO: 7867 and SEQ ID NO: 7870 and SEQ ID NO: 7872 and SEQ ID NO: 7880 and SEQ ID NO: 7883 and SEQ ID NO: 7884 and SEQ ID NO: 7885 and SEQ ID NO: 7886 and SEQ ID NO: 7888 and SEQ ID NO: 7889 and SEQ ID NO: 7894 and SEQ ID NO: 7895 and SEQ ID NO: 7896 and SEQ ID NO: 7901 and SEQ ID NO: 7905 and SEQ ID NO: 7908 and SEQ ID NO: 7918 and SEQ ID NO: 7928 and SEQ ID NO: 7931 and SEQ ID NO: 7937 and SEQ ID NO: 7947 and SEQ ID NO: 7952 and SEQ ID NO: 7959 and SEQ ID NO: 7962 and SEQ ID NO: 7975 and SEQ ID NO: 7987 and SEQ ID NO: 7989 and SEQ ID NO: 7992 and SEQ ID NO: 7997 and SEQ ID NO: 7998 and SEQ ID NO: 8002 and SEQ ID NO: 8006 and SEQ ID NO: 8007 and SEQ ID NO: 8008 and SEQ ID NO: 8010 and SEQ ID NO: 8015 and SEQ ID NO: 8017 and SEQ ID NO: 8018 and SEQ ID NO: 8020 and SEQ ID NO: 8022 and SEQ ID NO: 8024 and SEQ ID NO: 8026 and SEQ ID NO: 8043 and SEQ ID NO: 8048 and SEQ ID NO: 8053 and SEQ ID NO: 8063 and SEQ ID NO: 8064 and SEQ ID NO: 8066 and SEQ ID NO: 8095 and SEQ ID NO: 8098 and SEQ ID NO: 8099 and SEQ ID NO: 8103 and SEQ ID NO:

8126 and SEQ ID NO: 8145 and SEQ ID NO: 8153 and SEQ ID NO: 8155 and SEQ ID NO: 8157 and SEQ ID NO: 8161 and SEQ ID NO: 8171 and SEQ ID NO: 8175 and SEQ ID NO: 8180 and SEQ ID NO: 8184 and SEQ ID NO: 8192 and SEQ ID NO: 8198 and SEQ ID NO: 8199 and SEQ ID NO: 8201 and SEQ ID NO: 8212 and SEQ ID NO: 8216 and SEQ ID NO: 8222 and SEQ ID NO: 8224 and SEQ ID NO: 8225 and SEQ ID NO: 8228 and SEQ ID NO: 8238 and SEQ ID NO: 8242 and SEQ ID NO: 8256 and SEQ ID NO: 8259 and SEQ ID NO: 8274 and SEQ ID NO: 8277 and SEQ ID NO: 8278 and SEQ ID NO: 8289 and SEQ ID NO: 8292 and SEQ ID NO: 8297 and SEQ ID NO: 8301 and SEQ ID NO: 8317 and SEQ ID NO: 8329 and SEQ ID NO: 8333 and SEQ ID NO: 8334 and SEQ ID NO: 8335 and SEQ ID NO: 8351 and SEQ ID NO: 8355 and SEQ ID NO: 8374 and SEQ ID NO: 8377 and SEQ ID NO: 8379 and SEQ ID NO: 8383 and SEQ ID NO: 8394 and SEQ ID NO: 8406 and SEQ ID NO: 8447 and SEQ ID NO: 8452 and SEQ ID NO: 8455 and SEQ ID NO: 8458 and SEQ ID NO: 8465 and SEQ ID NO: 8468 and SEQ ID NO: 8472 and SEQ ID NO: 8479 and SEQ ID NO: 8482 and SEQ ID NO: 8487 and SEQ ID NO: 8492 and SEQ ID NO: 8500 and SEQ ID NO: 8503 and SEQ ID NO: 8507 and SEQ ID NO: 8511 and SEQ ID NO: 8512 and SEQ ID NO: 8517 and SEQ ID NO: 8518 and SEQ ID NO: 8529 and SEQ ID NO: 8530 and SEQ ID NO: 8538 and SEQ ID NO: 8542 and SEQ ID NO: 8553 and SEQ ID NO: 8554 and SEQ ID NO: 8556 and SEQ ID NO: 8560 and SEQ ID NO: 8568 and SEQ ID NO: 8569 and SEQ ID NO: 8578 and SEQ ID NO: 8579 and SEQ ID NO: 8580 and SEQ ID NO: 8583 and SEQ ID NO: 8584 and SEQ ID NO: 8585 and SEQ ID NO: 8587 and SEQ ID NO: 8590 and SEQ ID NO: 8601 and SEQ ID NO: 8607 and SEQ ID NO: 8611 and SEQ ID NO: 8616 and SEQ ID NO: 8624 and SEQ ID NO: 8625 and SEQ ID NO: 8631 and SEQ ID NO: 8632 and SEQ ID NO: 8639 and SEQ ID NO: 8644 and SEQ ID NO: 8665].

9. (Once amended) A microarray according to claim 8 where at least 75% of the nucleic acid molecules are comprised of different sequences and at least about 250 nucleotide residues and complementary to a molecule comprising [having] a sequence selected from said group.

10. (Once amended) A microarray according to claim 8 where at least 95% of the nucleic acid molecules are comprised of different sequences and at least about 250 nucleotide residues and complementary to a molecule comprising [having] a sequence selected from said group.

11. (Once amended) A microarray comprising nucleic acid molecules that are comprised of different sequences and at least about 250 nucleotide residues, wherein said nucleic acid molecules comprise nucleic acid sequences complementary to SEQ ID NO: 5776[and], SEQ ID NO: 5781[and], SEQ ID NO: 5782[and], SEQ ID NO: 5783[and], SEQ ID NO: 578[6 and]5, SEQ ID NO: 5787[and], SEQ ID NO: 5800[and], SEQ ID NO: 5804, SEQ ID NO: 5815[and], SEQ ID NO: 5818[and], SEQ ID NO: 5821[and], SEQ ID NO: 5823[and], SEQ ID NO: 5828[and], SEQ ID NO: 5830[and], SEQ ID NO: 5832, SEQ ID NO: 5836[and], SEQ ID NO: 5838[and], SEQ ID NO: 5840[and], SEQ ID NO: 5845[and], SEQ ID NO: 5849[and], SEQ ID NO: 5850[and], SEQ ID NO: 5851[and], SEQ ID NO: 5856, SEQ ID NO: 5859[and], SEQ ID NO: 5863[and], SEQ ID NO: 5868[and], SEQ ID NO: 5871, SEQ ID NO: 5874[and], SEQ ID NO: 5875[and], SEQ ID NO: 5877[and], SEQ ID NO: 5893[and], SEQ ID NO: 5896[and], SEQ ID NO: 5901[and], SEQ ID NO: 5908, SEQ ID NO: 5909[and], SEQ ID NO: 5920, SEQ ID NO: 5922[and], SEQ ID NO: 5929, SEQ ID NO: 5926[and], SEQ ID NO: 5928[and], SEQ ID NO: 5931[and], SEQ ID NO: 5936[and], SEQ ID NO: 5937[and], SEQ ID NO: 5939[and], SEQ ID NO: 5941[and], SEQ ID NO: 5944, SEQ ID NO: 5945, SEQ ID NO: 5950[and], SEQ ID NO: 5955[and], SEQ ID NO: 59[56 and]60, SEQ ID NO: 5961, SEQ ID NO: 5963[and], SEQ ID NO: 5964, SEQ ID NO: 5968, SEQ ID NO: 5973[and], SEQ ID NO: 5974[and], SEQ ID NO: 5991[and], SEQ ID NO: 5994[and], SEQ ID NO: 5999[and], SEQ ID NO: 6000[and], SEQ ID NO: 6001[and], SEQ ID NO: 6005[and], SEQ ID NO: 6006[and], SEQ ID NO: 6007[and], SEQ ID NO: 6011[and], SEQ ID NO: 6017[and], SEQ ID NO: 6018, SEQ ID NO: 6022[and], SEQ ID NO: 6023[and], SEQ ID NO: 6026, SEQ ID NO: 6030[and], SEQ ID NO: 6033[and], SEQ ID NO: 6042, SEQ ID NO: 6059[and], SEQ ID NO: 6063, SEQ ID NO: 6046, SEQ ID NO: 6065[and], SEQ ID NO: 6066, SEQ ID NO: 6089[and], SEQ ID

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6124[and], SEQ ID NO: 6131, SEQ ID NO: 6137[and], SEQ ID NO: 6141, SEQ ID
NO: 6144, SEQ ID NO: 6145, SEQ ID NO: 6147, SEQ ID NO: 6154[and], SEQ ID NO:
6167[and], SEQ ID NO: 6168[and], SEQ ID NO: 6170[and], SEQ ID NO: 6173[and],
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and SEQ ID NO: 7590 and SEQ ID NO: 7592 and SEQ ID NO: 7594 and SEQ ID NO: 7596 and SEQ ID NO: 7602 and SEQ ID NO: 7612 and SEQ ID NO: 7617 and SEQ ID NO: 7618 and SEQ ID NO: 7622 and SEQ ID NO: 7624 and SEQ ID NO: 7627 and SEQ ID NO: 7631 and SEQ ID NO: 7632 and SEQ ID NO: 7644 and SEQ ID NO: 7646 and SEQ ID NO: 7655 and SEQ ID NO: 7657 and SEQ ID NO: 7659 and SEQ ID NO: 7677 and SEQ ID NO: 7682 and SEQ ID NO: 7685 and SEQ ID NO: 7690 and SEQ ID NO: 7694 and SEQ ID NO: 7697 and SEQ ID NO: 7701 and SEQ ID NO: 7702 and SEQ ID NO: 7703 and SEQ ID NO: 7707 and SEQ ID NO: 7708 and SEQ ID NO: 7711 and SEQ ID NO: 7715 and SEQ ID NO: 7718 and SEQ ID NO: 7721 and SEQ ID NO: 7723 and SEQ ID NO: 7724 and SEQ ID NO: 7729 and SEQ ID NO: 7736 and SEQ ID NO: 7745 and SEQ ID NO: 7749 and SEQ ID NO: 7757 and SEQ ID NO: 7761 and SEQ ID NO: 7770 and SEQ ID NO: 7772 and SEQ ID NO: 7777 and SEQ ID NO: 7782 and SEQ ID NO: 7791 and SEQ ID NO: 7795 and SEQ ID NO: 7796 and SEQ ID NO: 7800 and SEQ ID NO: 7801 and SEQ ID NO: 7802 and SEQ ID NO: 7808 and SEQ ID NO: 7809 and SEQ ID NO: 7813 and SEQ ID NO: 7818 and SEQ ID NO: 7823 and SEQ ID NO: 7825 and SEQ ID NO: 7826 and SEQ ID NO: 7827 and SEQ ID NO: 7831 and SEQ ID NO: 7837 and SEQ ID NO: 7844 and SEQ ID NO: 7845 and SEQ ID NO: 7847 and SEQ ID NO: 7849 and SEQ ID NO: 7852 and SEQ ID NO: 7856 and SEQ ID NO: 7860 and SEQ ID NO: 7862 and SEQ ID NO: 7863 and SEQ ID NO: 7865 and SEQ ID NO: 7867 and SEQ ID NO: 7870 and SEQ ID NO: 7872 and SEQ ID NO: 7880 and SEQ ID NO: 7883 and SEQ ID NO: 7884 and SEQ ID NO: 7885 and SEQ ID NO: 7886 and SEQ ID NO: 7888 and SEQ ID NO: 7889 and SEQ ID NO: 7894 and SEQ ID NO: 7895 and SEQ ID NO: 7896 and SEQ ID NO: 7901 and SEQ ID NO: 7905 and SEQ ID NO: 7908 and SEQ ID NO: 7918 and SEQ ID NO: 7928 and SEQ ID NO: 7931 and SEQ ID NO: 7937 and SEQ ID NO: 7947 and SEQ ID NO: 7952 and SEQ ID NO: 7959 and SEQ ID NO: 7962 and SEQ ID NO: 7975 and SEQ ID NO: 7987 and SEQ ID NO: 7989 and SEQ ID NO: 7992 and SEQ ID NO: 7997 and SEQ ID NO: 7998 and SEQ ID NO: 8002 and SEQ ID NO: 8006 and SEQ ID NO: 8007 and SEQ ID NO: 8008 and SEQ ID NO: 8010 and SEQ ID NO: 8015 and SEQ ID NO: 8017 and SEQ ID NO: 8018 and SEQ ID NO: 8020 and SEQ ID NO: 8022 and SEQ ID NO: 8024 and SEQ ID NO: 8026 and SEQ ID NO: 8043

and SEQ ID NO: 8048 and SEQ ID NO: 8053 and SEQ ID NO: 8063 and SEQ ID NO: 8064 and SEQ ID NO: 8066 and SEQ ID NO: 8095 and SEQ ID NO: 8098 and SEQ ID NO: 8099 and SEQ ID NO: 8103 and SEQ ID NO: 8126 and SEQ ID NO: 8145 and SEQ ID NO: 8153 and SEQ ID NO: 8155 and SEQ ID NO: 8157 and SEQ ID NO: 8161 and SEQ ID NO: 8171 and SEQ ID NO: 8175 and SEQ ID NO: 8180 and SEQ ID NO: 8184 and SEQ ID NO: 8192 and SEQ ID NO: 8198 and SEQ ID NO: 8199 and SEQ ID NO: 8201 and SEQ ID NO: 8212 and SEQ ID NO: 8216 and SEQ ID NO: 8222 and SEQ ID NO: 8224 and SEQ ID NO: 8225 and SEQ ID NO: 8228 and SEQ ID NO: 8238 and SEQ ID NO: 8242 and SEQ ID NO: 8256 and SEQ ID NO: 8259 and SEQ ID NO: 8274 and SEQ ID NO: 8277 and SEQ ID NO: 8278 and SEQ ID NO: 8289 and SEQ ID NO: 8292 and SEQ ID NO: 8297 and SEQ ID NO: 8301 and SEQ ID NO: 8317 and SEQ ID NO: 8329 and SEQ ID NO: 8333 and SEQ ID NO: 8334 and SEQ ID NO: 8335 and SEQ ID NO: 8351 and SEQ ID NO: 8355 and SEQ ID NO: 8374 and SEQ ID NO: 8377 and SEQ ID NO: 8379 and SEQ ID NO: 8383 and SEQ ID NO: 8394 and SEQ ID NO: 8406 and SEQ ID NO: 8447 and SEQ ID NO: 8452 and SEQ ID NO: 8455 and SEQ ID NO: 8458 and SEQ ID NO: 8465 and SEQ ID NO: 8468 and SEQ ID NO: 8472 and SEQ ID NO: 8479 and SEQ ID NO: 8482 and SEQ ID NO: 8487 and SEQ ID NO: 8492 and SEQ ID NO: 8500 and SEQ ID NO: 8503 and SEQ ID NO: 8507 and SEQ ID NO: 8511 and SEQ ID NO: 8512 and SEQ ID NO: 8517 and SEQ ID NO: 8518 and SEQ ID NO: 8529 and SEQ ID NO: 8530 and SEQ ID NO: 8538 and SEQ ID NO: 8542 and SEQ ID NO: 8553 and SEQ ID NO: 8554 and SEQ ID NO: 8556 and SEQ ID NO: 8560 and SEQ ID NO: 8568 and SEQ ID NO: 8569 and SEQ ID NO: 8578 and SEQ ID NO: 8579 and SEQ ID NO: 8580 and SEQ ID NO: 8583 and SEQ ID NO: 8584 and SEQ ID NO: 8585 and SEQ ID NO: 8587 and SEQ ID NO: 8590 and SEQ ID NO: 8601 and SEQ ID NO: 8607 and SEQ ID NO: 8611 and SEQ ID NO: 8616 and SEQ ID NO: 8624 and SEQ ID NO: 8625 and SEQ ID NO: 8631 and SEQ ID NO: 8632 and SEQ ID NO: 8639 and SEQ ID NO: 8644 and SEQ ID NO: 8665].